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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,430	04/15/2004	Toyohiko Mitsuzawa	Q81113	6503
23373	7590	08/09/2006	EXAMINER	
SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037			HUFFMAN, JULIAN D	
			ART UNIT	PAPER NUMBER
			2853	

DATE MAILED: 08/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/824,430	Applicant(s) MITSUZAWA, TOYOHICO	
	Examiner Julian D. Huffman	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2006 (preliminary amendment).
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☒ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 10/686,772.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>4/15/04, 10/19/05, 1/25/06, 6/20/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 15-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The language "most susceptible to vibration caused by moving said moving member" is indefinite. There are practically an infinite number of vibration sources: vibration from the moving member moving while a person transports the device from one office to another, vibration from the moving member moving while the printer is transported in a truck over a highway, vibration from the moving member moving during printing while the device is supported on any one of various surface types including surfaces made of different materials with different rigidity, supported by any number of support structures, such as wooden legs, metal legs, legs resting on carpet, or tile, or wood flooring, etc. Each of these sources produces different vibrational forces of varying magnitude and direction on the ejecting units. Given the vast variance in force, there would be no one ejecting unit most susceptible to the various source of vibration, even if it were practically possible to make such a determination (which it is not given the near infinite types of vibrational forces).

It is suggested that applicant use claim language such as that found in the dependent claims, which describe the positional relation of the liquid ejecting group relative to other structures in the device (claim 16 for example).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 15-22, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Otsuki et al. (U.S. 6,196,736 B1).

Otsuki et al. discloses :

With regards to claims 15 and 31, a liquid ejecting apparatus/system (fig. 1) comprising:

a computer (88) and a liquid ejecting apparatus connected to the computer including:

a moving member (30, column 5, lines 2-15) that has at least two liquid ejecting section groups (fig. 20, either one of elements 91, 92, or 93 is a liquid ejecting section group, alternatively, each column or row of nozzles may be considered a group) and that is capable of moving in a predetermined direction due to an external force (column 5, lines 2-15), each of said liquid ejecting section groups including at least two liquid ejecting sections (each column, row, or any two nozzles, may be considered a liquid

ejecting section) for ejecting liquid droplets to form liquid droplet marks on a medium, and each of said liquid ejecting section groups being driven based on a single reference ejection signal (all of the sections are driven based on a position single from encoder 39, fig. 17) for causing said liquid droplets to be ejected from said liquid ejecting sections;

a reference liquid ejecting section group (element K3, column 13, lines 21-24) , among said liquid ejecting section groups, that is driven according to the reference ejection signal therefor at a predetermined reference timing and that is a liquid ejecting section group other than the liquid ejecting section group, among said liquid ejecting section groups, that is the most susceptible to vibration caused by moving said moving member (since K3 is located near the center of the printhead, and the center of carriage 30, it therefore is not the ejection head which is most susceptible to vibration);

at least one other liquid ejecting section group (C, Y, or M), among said liquid ejecting section groups, that is driven according to the reference ejection signal therefor at a timing adjusted based on said predetermined reference timing of said reference liquid ejecting section group (column 13, lines 20-24, the other correction amounts are derived by adjusting timing based on the reference timing).

With regards to claim 16, the reference liquid ejecting section group is positioned on a side, in a direction intersecting with said predetermined direction, that is close to a section, in said moving member, to which said external force is applied (compare figs. 1 and 20).

With regards to claim 17, the reference liquid ejecting section group is positioned on a side that is close to a center of said section to which said external force is applied (compare figs. 1 and 20).

With regards to claim 18, said liquid ejecting section groups are liquid ejecting section rows, each of said liquid ejecting section rows including said liquid ejecting sections aligned in a row in a carrying direction in which said medium is carried (fig. 20).

With regards to claim 19, said liquid ejecting section groups are liquid ejecting units, each of said liquid ejecting units including at least two liquid ejecting section rows aligned in said predetermined direction, and each of said liquid ejecting section rows including said liquid ejecting sections aligned in a row in a carrying direction in which said medium is carried (fig. 20).

With regards to claim 20, said timing for driving said other liquid ejecting section group is adjusted to make a reference liquid droplet mark row that is taken as a reference and that is formed in a carrying direction, in which said medium is carried, by said reference liquid ejecting section group ejecting liquid at said predetermined reference timing while moving and a liquid droplet mark row that is formed by said other liquid ejecting section group ejecting liquid while moving be continuous with each other (fig. 13).

With regards to claim 21, this limitation does not further limit the structure of the apparatus and the structure of Otsuki is capable of operating in the manner claimed.

With regards to claim 22, the liquid is ink.

With regards to claim 30, a method of adjusting positions of liquid droplet marks, comprising the steps of:

preparing a liquid ejecting apparatus including a moving member (30) that has at least two liquid ejecting section groups K3, C) and that is capable of moving in a predetermined direction due to an external force, each of said liquid ejecting section groups including at least two liquid ejecting sections (top half of row and bottom half of row each constitute a section) for ejecting liquid droplets to form liquid droplet marks on a medium, each of said liquid ejecting section groups being driven based on a single reference ejection signal for causing liquid droplets to be ejected from said liquid ejecting sections (encoder provides a reference signal for ejection of all droplets);

ejecting liquid to form a liquid droplet mark pattern including liquid droplet marks formed by ejecting liquid from the liquid ejecting sections of a reference liquid ejecting section group (K3), among said liquid ejecting section groups, that is driven according to the reference ejection signal therefor at a predetermined reference timing and that is a liquid ejecting section group other than the liquid ejecting section group, among said liquid ejecting section groups, that is the most susceptible to vibration caused by moving said moving member (since K3 is located near the center of the head, it is not the group most susceptible to vibration) and

liquid droplet marks formed by ejecting liquid from the liquid ejecting sections of one other liquid ejecting section group, among said liquid ejecting section groups other than said reference liquid ejecting section group (C), that is driven according to the

reference ejection signal therefor at a timing different from said predetermined reference timing (column 13, lines 21-24); and

adjusting the timing of the reference ejection signal for said one other liquid ejecting section group based on said liquid droplet mark pattern (fig. 13, column 13).

5. Claims 15-29 are rejected under 35 U.S.C. 102(b) as being anticipated by Kubota et al. (U.S. 20020051033).

Kubota et al. discloses the claimed structure, including :

With regards to claim 15 a liquid ejecting apparatus comprising:

a moving member (fig. 1, element 1) that has at least two liquid ejecting section groups (fig. 2, element 11) and that is capable of moving in a predetermined direction due to an external force, each of said liquid ejecting section groups including at least two liquid ejecting sections (11B, 11Y, 11M, 11C) for ejecting liquid droplets to form liquid droplet marks on a medium;

a reference liquid ejecting section group (any one of the groups is capable of functioning as a reference liquid ejecting section group), among said liquid ejecting section groups, and that is a liquid ejecting section group other than the liquid ejecting section group, among said liquid ejecting section groups, that is the most susceptible to vibration caused by moving said moving member (one of the groups is most susceptible to vibration and any of the groups may be the reference liquid ejecting section group);

at least one other liquid ejecting section group among said liquid ejecting section groups (any other group).

With regards to claim 16, the reference liquid ejecting section group is positioned on a side, in a direction intersecting with said predetermined direction, that is close to a section, in said moving member, to which said external force is applied (each group is placed close to the claimed section).

With regards to claim 17, the reference liquid ejecting section group is positioned on a side that is close to a center of said section to which said external force is applied (each group may be said to be close to the claimed center).

With regards to claim 18, said liquid ejecting section groups are liquid ejecting section rows (fig. 3b, nozzles are arranged in rows), each of said liquid ejecting section rows including said liquid ejecting sections aligned in a row in a carrying direction in which said medium is carried (fig. 3b and fig. 1).

With regards to claim 19, said liquid ejecting section groups are liquid ejecting units, each of said liquid ejecting units including at least two liquid ejecting section rows aligned in said predetermined direction, and each of said liquid ejecting section rows including said liquid ejecting sections aligned in a row in a carrying direction in which said medium is carried (fig. 2).

With regards to claim 22, the liquid is ink.

With regards to claims 23 and 25, each of said liquid ejecting section groups has an achromatic color liquid ejecting section row (black) for ejecting achromatic color ink as said liquid and a chromatic color liquid ejecting section row (any yellow, magenta or cyan row) for ejecting chromatic color ink.

With regards to claim 27, the inks are magenta-type ink and cyan-type ink (fig. 2).

With regards to claim 29, a moving member (fig. 1, element 1) that has at least two ink ejecting units (fig. 2, 11, 12, 13, 14) and that is capable of moving in a predetermined direction due to an external force, each of said ink ejecting units including at least two ink ejecting section rows (fig. 3b, each section, black, yellow, magenta and cyan has an ink ejection section row) aligned in said predetermined direction, each of said ink ejecting section rows including at least two ink ejecting sections (top half and bottom half of row) that are for ejecting ink droplets to form ink droplet marks on a medium and that are aligned in a row in a carrying direction in which said medium is carried;

a reference ink ejecting unit (any ink ejecting unit may be a reference ink ejecting unit);

at least one other ink ejecting unit, among said ink ejecting units (any other ink ejecting unit);

said reference ink ejecting unit is positioned on a side, in a direction intersecting with said predetermined direction, that is close to a center of a section, in said moving member, to which said external force is applied (each ejection unit is close to the claimed center); and

each of said ink ejecting units has an achromatic color ink ejecting section row for ejecting achromatic color ink (black) and at least two chromatic color ink ejecting section rows each for ejecting a different one of at least two chromatic color inks (yellow, magenta or cyan).

All other limitations claimed and not discussed herein are not deemed to further limit the structure of the claimed apparatus, and/or the structure of Kubota et al. is capable of operating in the manner so claimed.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kubota in view of Otsuki et al.

Kubota discloses everything claimed (see discussion of claim 15 above) with the exception of a computer connected to the liquid ejecting device in a liquid ejecting system.

However, Otsuki et al. discloses a computer connected to a liquid ejecting device in a liquid ejecting system (fig. 1, element 88).

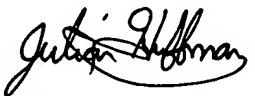
It would have been obvious to one having ordinary skill in the art at the time of the invention to connect the computer of Otsuki to the ejecting device of Kubota for the purpose of providing a means to transport print data to the liquid ejecting device in a liquid ejecting system.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian D. Huffman whose telephone number is (571) 272-2147. The examiner can normally be reached on 10:00a.m.-6:30p.m. Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Julian D. Huffman
Art Unit 2853
28 July 2006